HP NetServer LXr 8500
with
HP Rack Storage/12FC & HP Rack Storage/12
Cluster Configuration Guide

17 October 2000
(see Versions at the end of this document)

Introduction

This document defines the configurations that Hewlett-Packard supports for using the HP NetServer LXr 8500 with the HP Rack Storage/12FC and Microsoft Cluster Server These configurations minimize single points of failure (SPOF) and provide extended availability. The specific configuration certified and supported by both Hewlett-Packard and Microsoft is defined, as are other guidelines to assist you in configuring your clustered NetServers. This guide is prescriptive; it describes the configurations supported by HP. Any deviance to these configurations can result in an inoperative cluster or an operating cluster with degraded performance, hidden SPOFs, etc., and therefore will not be supported by HP.

What's Defined in a Racked Cluster

- *Cluster*
- *SPUs*
- *Local and Shared Storage*
- *Intra-cluster and Client LANs*
- *Shared Storage Cabling*

Cluster

Type of SPUs	HP NetServer LXr 8500 Each node must be the same model SPU, but may have different clock speeds, main memory sizes, cache sizes, and number of CPUs.
Number of nodes	2
Shared Storage	HP Rack Storage/12FC with FCArray Cards, HP disks, and a HP D8602A HBA in each server. See *Shared Storage* below.
LANs:	
Client LAN	Any that is HP and Microsoft approved. See *Client LAN* below.
Intra-cluster (Heartbeat) LAN	HP D5013A/B with crossover cable. See *Intra-cluster LAN* below.
Power source	Direct from power mains, power conditioner or uninterruptible power supply (UPS) using any power conditioner or UPS. Redundant power distribution units (PDU's) are strongly recommended.
System software:	
Navigator version	L.16.05 or later

Operating System	Microsoft Windows NT Server 4.0, Enterprise Edition with Service Pack SP6a or later.

SPU

Model	HP NetServer LXr 8500
Clock speed	400/450, 500/550, 700 MHz
No. of CPUs	2 – 8
BIOS version	ASPN Release 8
CPU cache	Any size
RAM	128 MB minimum. Must be HP.
No. of power supplies	3 required for redundancy
Local storage	See *Local Storage* below.
I/O slots	Added cards may be installed in any appropriate slot, keeping in mind the server's default boot order as listed below:
Default Boot Order	IDE CD-ROM, FDD, PCI-1, PCI-2, SCSI A, SCSI B, PCI-3, PCI-4, PCI-5 through PCI-10
M/S Certified Configuration	P6 – Shared Storage HBA P4 – Intra-cluster (Heartbeat) LAN P3 – Client LAN P2 – HP TopTools Control card D6028A (optional) Booted from embedded SCSI

Storage

Local

Controller	May use embedded SCSI, NetRAID-1Si or NetRAID-3Si.
Driver	For embedded SCSI, use sym_hi.sys version 4.12 or later. For NetRAID-xSi, use mraidnt.sys version 2.24.
Cabinets (Physical drive location)	SPU internal drive bays or HP external drive cabinet (e.g., HP Rack Storage/12), any number.
Disk drives (hot swap or fixed)	Must be HP
SCSI bus	Any HP cables that meet SCSI specifications and any SCSI bus speed.
SCSI Ids	Any

Shared

HP Rack Storage/12FC	**Required** – D5991A
Host Bus Adapter	
Model	HP Fibre Channel Host Bus Adapter - HP D8602A
No. of HBAs	1
Driver	Hhba5100.sys 1.12 or later
RAID level	0, 1, 3, 5, 10
Cabinet	
Model	HP NetServer Rack Storage/12FC- D5991A
RAID arrays	Not more than 8 physical drives per logical array and not more than 8 LUNs are permitted per Rack Storage/12FC and Rack Storage/12 combination in a cluster.
No. of cabinets	1
FC Array Cards	

Model	HP Fibre Channel Array Controller - D5990A
No. of cards/cabinet	2 (Requires second card be installed in the Rack Storage/12FC.)
Firmware	4.64-00 or later
Status SCSI ID	5 (fixed)
Disk SCSI IDs	0 – 3, 8 – 15 (fixed)
Disk drives:	Any HP drive supported by storage enclosure including: HP 9.1 GB (7200 rpm) Low Profile Ultra2 SCSI Disk Module D6106A HP 9.1 GB (7200 rpm) Low Profile Ultra3 SCSI Disk Module P1217A HP 9.1 GB (10k rpm) Low Profile Ultra2 SCSI Disk Module D6107A HP 9.1 GB (10k rpm) Low Profile Ultra3 SCSI Disk Module P1168A HP 18.2 GB (7200 rpm) Half Height Ultra2 SCSI Disk Module D6108A HP 18.2 GB (7200 rpm) Low Profile Ultra3 SCSI Disk Module P1216A HP 18.2 GB (10k rpm) Half Height Ultra2 SCSI Disk Module D7031A HP 18.2 GB (10k rpm) Low Profile Ultra3 SCSI Disk Module P1166A HP 18.2 GB (7200 rpm) Low Profile Ultra2 SCSI Disk Module D7174A HP 18.2 GB (10k rpm) Low Profile Ultra2 SCSI Disk Module D7175A HP 36.4 GB (10k rpm) Half Height Ultra2 SCSI Disk Module D8210A HP 36.4 GB (10k rpm) Low Profile Ultra3 SCSI Disk Module D9419A
Fibre-channel cables	Optical (Server to Hub only): 50 meter D6980A 100 meter D6981A Copper (Shared Storage to Hub and Server to Hub): 3 meter D6978A 5 meter D6979A 10 meter D7080A
Hub	**Required**
Model	HP D6976A 6-port fibre channel
Quantity	1

HP Rack Storage/12	**Optional**
Number of cabinets:	1 – 2
Model	HP NetServer Rack Storage/12 - D5989B plus two D6025B SCSI cards for each cabinet
Status SCSI ID	5 (fixed)
Disk SCSI IDs	0 – 3, 8 – 15 (fixed)
Disk drives:	Same as HP Rack Storage/12FC
Cables	Any HP LVD SCSI cables from the following list: 1 meter D7131A 2.5 meter D6020A 5 meter D6982A 10 meter D6983A

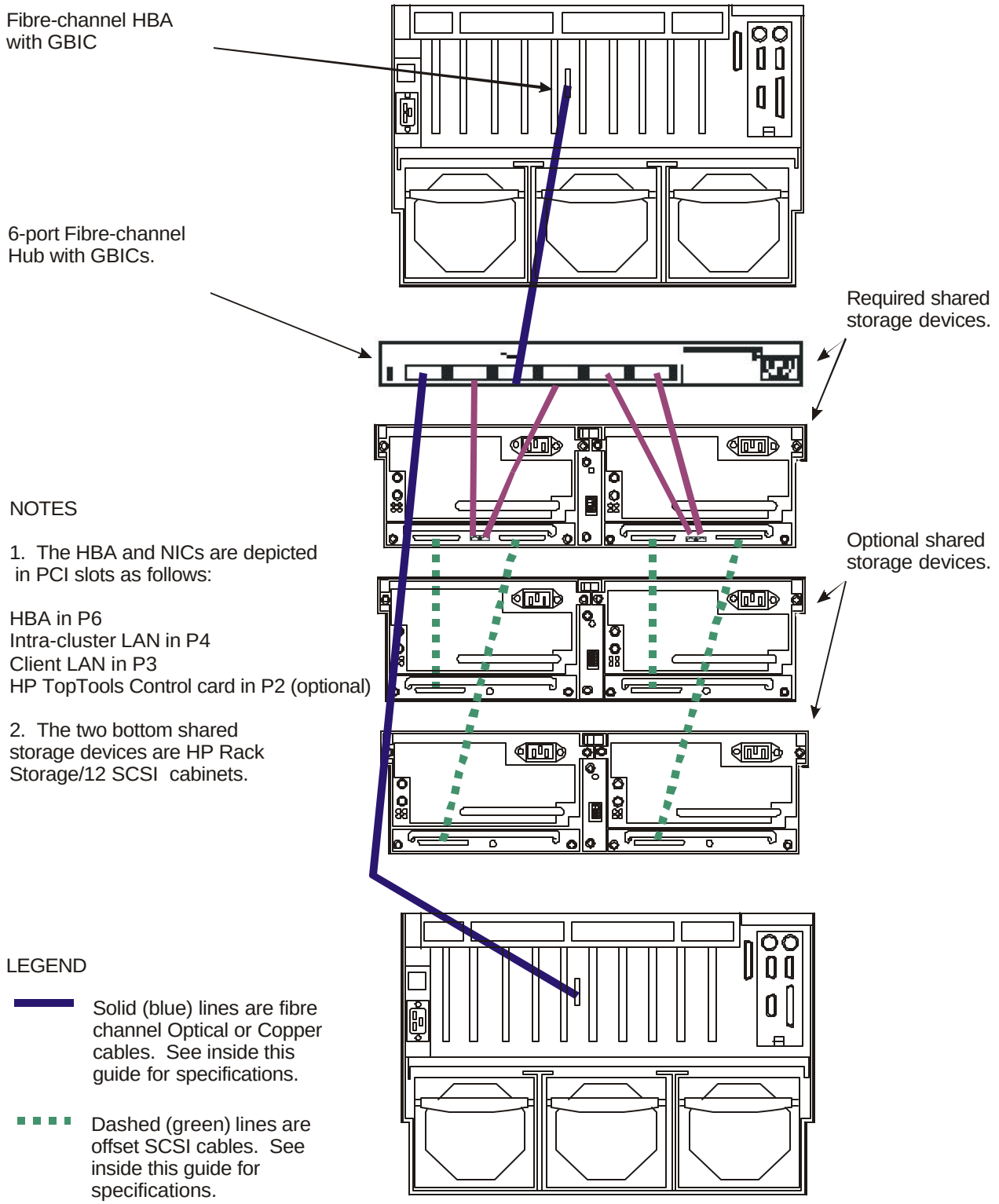
LANs

	Intra-cluster (Heartbeat) LAN	Client LAN
LAN connection	HP D5954A crossover cable or any equivalent	Any LAN

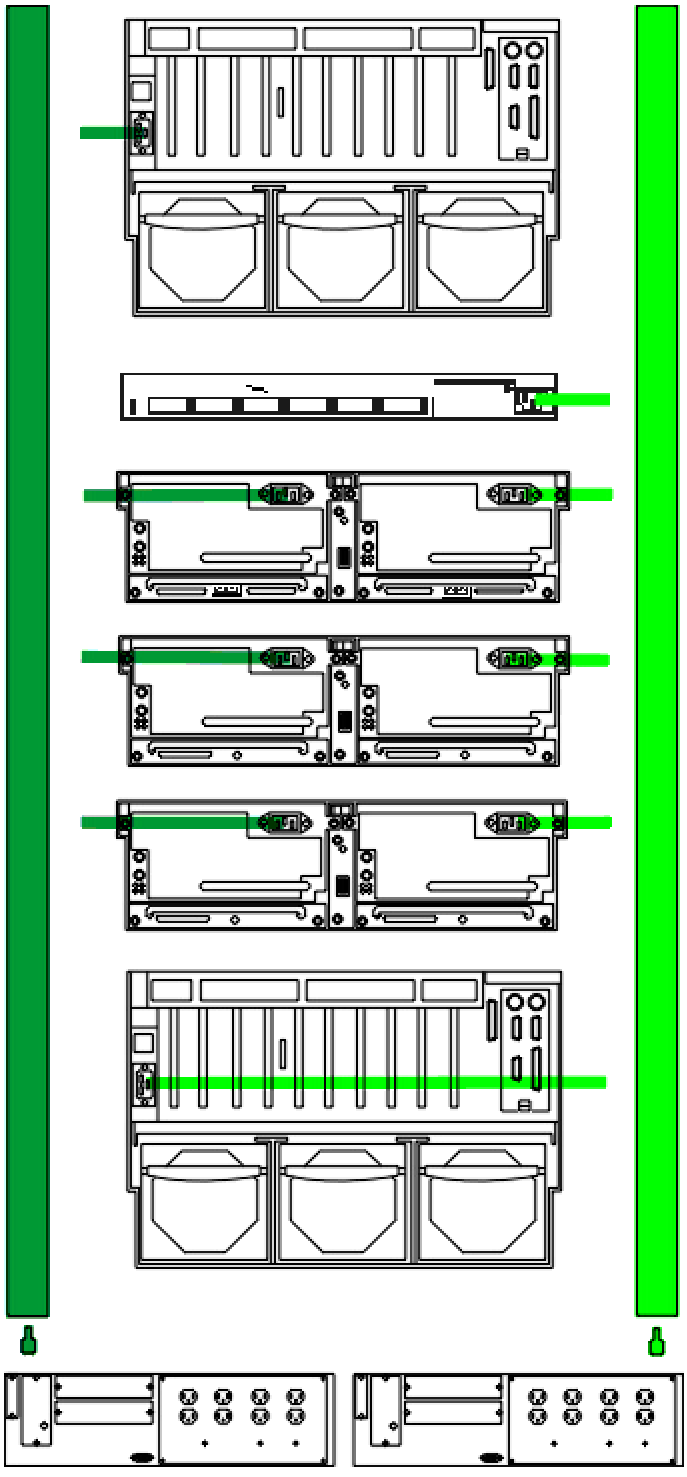
	The intra-cluster LAN may only be used for cluster node communication via a crossover cable. It may not be used for client communication.	
NIC:		
Model	HP D5013A/B (10/100TX PCI)	Any that is on both the HP Tested Products List and the Microsoft Hardware Compatibility List.
Driver	Hptxnt.sys 3.27.00.0001 or later	Vendor supported driver **NOTE** If the Client and Intra-cluster LANs are the same model the Client LAN must use the same driver as the Intra-cluster LAN.
No. of NICs	1	1 minimum

Shared Storage Cabling

This part of the guide defines the allowable cabling configurations for clusters using the HP NetServer LXr 8500, one HP Rack Storage/12FC and two optional HP Rack Storage/12s. Only this cabling configuration and these cables are supported.



HP Microsoft Cluster using HP Rack Storage/12FC and Rack Storage/12 and 6 Port Fibre Channel Hub



Power Cabling to Separate Power Circuits

Versions

17 October 2000	Added 700 MHz model. Revised intro, boot spec and I/O slots. Added boot priority and Ultra3 drives. Removed simplex option. Corrected verbiage in drawing
1 December 1999	Initial release